CURRENT LITERATURE

BOOK REVIEWS

Mesozoic plants

The present contribution[1] is a continuation of the admirable catalogues of mesozoic plants, published from time to time, by the authorities of the British Museum. One notes with pleasure in the 350 odd pages and over 30 plates that the anatomy of the forms discussed is somewhat fully dealt with. Excluding algae and fungi, which have been described in a previous volume, the authoress begins with the ferns, the most interesting of which is the genus *Tempskya*, illustrated mainly from the Russian species *T. rossica*, recently figured for both habit and anatomy by KIDSTON and GWYNNE-VAUGHAN.

The Cycadophyta are represented by species of *Bennettites*, *Cycadeoidea*, and a new genus *Colymbetes*, all showing vegetative structure and anatomically illustrated. *Cycadeoidea* and *Colymbetes* are of great interest because they manifest the reduplication of the vascular ring so common in living cycads, but hitherto not described for *Bennettites* and its allies.

In the case of the conifers, a number of woods as well as a few twigs and cones are described. In the course of her descriptions of woody coniferous structures, the writer devotes herself frequently to somewhat caustic criticisms of the reviewer's anatomical publications on mesozoic conifers. Significantly enough she describes no araucarian woods for the Greensand. These important conifers seem to have had practically no anatomical representatives in the Lower Cretaceous and the Jurassic, an interesting fact for those who accept the orthodox view that the conifers have originated from the Cordaitales through the araucarian line. Dr. STOPES's interesting if not convincing point of view can perhaps as well be illustrated from her references to the genus *Sequoia* of the Mesozoic, as otherwise. Dr. HOLLICK and the reviewer have brought forward anatomical evidence from the study of correlated external form and internal organization that the supposed sequoias of the American Mesozoic are in reality araucarian conifers, and do not belong at all to the genus which they superficially simulate. Dr. STOPES admits that our material is not *Sequoia*, and this is at first sight an indication of rare and pleasing open-mindedness, but we are surprised to learn that the mesozoic remains universally included under *Sequoia* and *Geinitzia* by competent American systematic paleobotanists are in reality wrongly referred to those genera and do not cor-

[1] STOPES, Dr. MARIE, British Museum catalogue of mesozoic plants. Part 2. Lower Greensand (Aptian) plants of Britain. London. 1915.

respond with the similar European forms. This attitude appears to be of very dubious value indeed, in view of the completeness of the agreement never before questioned between the American genera and even species and those of Europe as long recognized by distinguished students of both floras. This position in regard to American supposed mesozoic sequoias and their European counterparts is not the less surprising in view of the meagerness and bad state of preservation of her material, in contrast to the abundance and perfection of that from American deposits.

The volume closes with anatomical descriptions of the woody dicotyledonous genera *Cantia*, *Woburnia*, *Sabulia*, *Hythia*, and *Aptiana*, which present no feature of interest beyond vouching anatomically for the presence of the dicotyledons in the early Cretaceous.—E. C. JEFFREY.

Hydrogen ion concentration

MICHAELIS[2] is the author of the first of a series of *Monographs on plant and animal physiology*. The series, which is edited by CZAPEK and PARNAS, is to bear somewhat the same relation to its realm as the well known *Monographs on biochemistry* bear to their more restricted field. Many of the proposed numbers promise to be of the greatest interest to plant physiologists. The present volume deals with hydrogen ion concentration, its significance in biology, and the methods for measuring it. In the introduction the author points out the importance of the "actual" reaction of the medium in determining the course of chemical changes in organisms, and cites instances of the misinterpretation of experimental results due to failure to consider this factor.

The monograph is divided into three parts. In the first the theoretical significance of hydrogen ion concentration is discussed. Following a development of the general principles and formulae for the dissociation of water, acids and bases, and amphoteric electrolytes, these are applied to the special cases of proteins and enzymes. By combining the results of experiments on the influence of hydrogen ion concentration on enzyme activity, and the results of transfer experiments on the same enzymes, some interesting conclusions are drawn as to the chemical nature of the enzymes studied. Invertase, for instance, is considered an amphoteric electrolyte of which only the undissociated part of the "invertase acid" is effective, and only the cations of pepsin are effective in hydrolyzing proteins.

The second part of the monograph is a statement of present knowledge as to the hydrogen ion concentration at which physiological processes go on in organisms, the variations of this factor that occur, and the means the organism possesses for regulating the acidity of its body fluids. In general, if a body fluid is characterized by a specific enzyme, the hydrogen ion concentration of the fluid corresponds to the optimum for that enzyme. The variations are

[2] MICHAELIS, L., Die Wasserstoffionenkonzentration, ihre Bedeutung für die Biologie und die Methoden ihrer Messung. Berlin. 1914.